

REMARKS

This Amendment is filed in response to the Final Office Action mailed February 27, 2006 and the Advisory Action mailed June 28, 2006, and is filed herewith a Request for Continuing Examination. All objections and rejections are respectfully traversed.

Claims 1-25 and 28-34 are currently pending.

Claims 28-34 are added to better claim the invention.

Please enter and consider the 1.116 amendment filed on April 27, 2006.

Request for Interview

The Applicant respectfully requests a telephonic interview with the Examiner after the Examiner has had an opportunity to consider this Amendment, but before the issuance of the next Office Action. The Applicant may be reached at 617-951-3067.

Claim Rejections – 35 USC § 102

At paragraph 3 of the Final Office Action, claims 1-3, 9-15, and 26 were rejected under 35 U.S.C. §102 as being anticipated by Gross et al., US Patent No. 6,128,734, issued on Oct. 3, 2000, hereinafter Gross.

The present invention, as set forth in representative claim 1, comprises in part:

1. A method of transferring ownership of a volume comprising a plurality of disks from a source server to a destination server comprising the steps of:

changing ownership information stored in each of the plurality of disks to an un-owned state from a state of source server ownership; and

changing ownership information stored in each of the plurality of disks to a state of destination server ownership from the un-owned state.

By way of background, Gross describes a computer system for use with upgrading an operating system by selecting and preparing a new boot device while the computer system is running and rebooting the computer system to load the upgrade. During rebooting, the system removes the original volume group, creates a new directory and adds the new volume group.

Applicant respectfully urges that Gross does not teach ***changing ownership information stored in each of the plurality of disks to an un-owned state from a state of source server ownership and changing ownership information stored in each of the plurality of disks to a state of destination server ownership from the un-owned state.***

In further detail, Applicant's invention changes ownership information of disks between three states, which are source server ownership, un-owned state, and destination server ownership. By changing the ownership information of the disks, the disks can be transferred to a new server, for example, to balance the load between servers without having to ask permission. In addition, the source server changes the ownership information to the un-owned state and the destination server changes the ownership information from the un-owned state to the destination server owned state. Additionally, Applicant's invention is changing ownership of disks in use. In contrast, Gross describes removing a volume group and importing a new different volume in the old location or a new location.

Additionally, there is no disclosure in Gross of Applicant's changing ***ownership information*** on each disk which includes a small computer systems interface (SCSI) reservation and a predetermined ownership sector on each disk. Gross only discloses use of

a SCSI connection, but does not disclose changing a SCSI reservation to change ownership of disks, as claimed by Applicant. Also, Gross does not disclose changing a predetermined ownership sector on each disk, as claimed by Applicant. Gross only describes removing and adding new different volumes.

Furthermore, the Examiner argues that Gross shows Applicant's invention at Col. 9, lines 49-55 by using a vgexport and vgimport command. Gross states at Col. 9, lines 49-55:

```
"vgexport /dev/vg00  
mkdir /dev/vg00  
mknod /dev/vg00/group c 64 0x0000  
vgimport /dev/vg00 /dev/dsk/disk.sub.—124"
```

By reading Col 9, line 55 to Col. 10 line 13, the commands are described, and the following paragraph states:

"The vgexport command removes the volume group /dev/vg00 from the system without modifying the logical volume information on the physical volume. Specifically, /dev/vg00 is removed from the /etc/lvmtab file. The associated device files including the /dev/vg00 directory and the group file are removed from the system. The volume group information and data is untouched on the physical volume. The mkdir command creates a new directory named vg00 at /dev. The mknod command prepares for the creation of the new volume group by creating a character device special file at /dev/vg00/group. As mentioned, character device special files are used for devices that can transfer single bytes at a time, such as magnetic tape drives, disk drives operating in raw mode, and terminals. The vgimport command adds the volume group /dev/vg00 to the system. The specified physical volume /dev/dsk/disk.sub.-- 124 is scanned to obtain the volume group information and logical volume information. This command works like the vgcreate command by requiring that the volume group device directory and group special file be created before the command is executed. The volume group /dev/vg00 is added to the /etc/lvmtab file, and the associated logical volume device files are added to the system. The vgimport command assumes that the volume group informa-

tion has already been created on the physical volumes.” (emphasis added)

Now applying the above paragraph to the lines stated by the Examiner the command lines state:

vgexport /dev/vg00 - means remove volume group from system
mkdir /dev/vg00 - means create a new directory
mknod /dev/vg00/group c 64 0x0000 - means create a character special file
vgimport /dev/vg00 /dev/dsk/disk.sub__124 -- means add a new volume group to the system

The above commands only describe removing a volume group and adding a new different volume group to the system. There is no suggestion in Gross of changing ownership information between three different states of an existing volume or disk. In fact, Gross teaches away by assuming “volume group information has already been created on the physical volumes.” (Col. 10, lines 11-13).

Accordingly, Applicant respectfully urges that Gross is legally insufficient to anticipate the present claims under 35 U.S.C. §102 because of the absence of the Applicant’s claimed novel *changing ownership information stored in each of the plurality of disks to an un-owned state from a state of source server ownership* and *changing ownership information stored in each of the plurality of disks to a state of destination server ownership from the un-owned state.*

Claim Rejections – 35 USC § 103

At paragraphs 4-5 of the Office Action, claims 4-7 were rejected under 35 U.S.C. §103 as being unpatentable over Gross in view of Matsunami et al., US Patent Application Publication No. 2002/0099914, hereinafter Matsunami.

The present invention, as set forth in representative claim 4, comprises in part:

4. A method for transferring ownership of a volume having a plurality of disks, the method comprising the steps of:
 sending a first message to a source server, the message containing a request for transferring ownership of a volume of disks;
 receiving a response from the source server;
 if the response contains abort information, aborting the transfer;
 if not, verifying that the volume can be transferred;
 if the volume can be transferred, sending a second message to the source server to perform the first part of a transfer process to transfer ownership from the source server to an un-owned state;
 receiving a response from the source server after it performed the first part of the transfer process; and
 in response to the step of receiving, performing a second part of the transfer process to transfer ownership from the un-owned state to a destination server.

By way of background, Matsunami describes a system for an administrator to organize logical units (LUs) into a pool area use with a storage system. For a volume to use the LUs in the pool area, the LU is set as used capacity of the pool area and the designated volume is set in the storage. The system uses a set of policies for organizing the volumes and the LUs.

Applicant respectfully urges that Gross or Matsunami, taken alone or in combination do not teach or suggest Applicant's claimed novel *sending a first message to a source server, the message containing a request for transferring ownership of a volume of disks ... if the volume can be transferred, sending a second message to the source*

server to perform the first part of a transfer process to transfer ownership from the source server to an un-owned state ... in response to the step of receiving, performing a second part of the transfer process to transfer ownership from the un-owned state to a destination server. Applicant's invention transfers ownership from one server to a second server by changing the ownership information of each disk of the volume. Applicant's invention changes the ownership state of the disks in the volume, where the disks are owned by a particular server, for example to balance the load between the servers. There is no teaching or suggestion in Gross or Matsunami of changing the ownership state of the volumes in the system to transfer ownership. Gross only teaches of removing a volume, where the volume is discarded and not moved to another location. Matsunami merely describes allocating and resizing storage areas on disks and is silent concerning transferring ownership in a transfer process.

The Examiner argues that `lvremove` command shows transferring of ownership because it removes a volume. Applicant respectfully notes that transferring requires passing something between two objects, as stated in the Miriam-Webster Dictionary. The Miriam-Webster definition for transferring states "to convey from one person, place, or situation to another." Therefore, Applicant's invention is transferring ownership between two servers. If Applicant were to use the teachings of the `lvremove` command, then ownership would be transferred from one server to nothing, because the volume is removed from the system and not moved to another location, and this would not follow the definition of conveying something from one object to another.

Accordingly, Applicant respectfully urges that Gross and Matsunami, taken either singly or in combination, are legally insufficient to make obvious the present claims under 35 U.S.C §103 because of the absence of the Applicant's *sending a first message to a*

source server, the message containing a request for transferring ownership of a volume of disks ... if the volume can be transferred, sending a second message to the source server to perform the first part of a transfer process to transfer ownership from the source server to an un-owned state ... in response to the step of receiving, performing a second part of the transfer process to transfer ownership from the un-owned state to a destination server.

At paragraph 6 of the Office Action, claims 16-25 were rejected under 35 U.S.C. §103 as being unpatentable over Matsunami, in view of Delaney et al., US Patent Application Publication 2003/0097611, hereinafter Delaney.

The present invention, as set forth in representative claim 16, comprises in part:

16. A method of transferring ownership of a volume having a plurality of disks from a source server to a destination server, the method comprising the steps of:

changing a first attribute of ownership from source server ownership to an un-owned state by writing the change to a log data structure and rewriting the first attribute of ownership on the disk, where the first attribute is a predetermined ownership sector on each disk;

changing a second attribute of ownership from source ownership to an un-owned state by writing the change to a second log data structure and rewriting the second attribute of ownership on the disk, where the second attribute is small computer systems interface (SCSI) reservation;

changing the first attribute of ownership from the un-owned state of ownership to destination server ownership by writing the change to a third log data structure and rewriting the first attribute of ownership on the disk; and

changing the second attribute of ownership from the un-owned state to destination server ownership by writing the change to a fourth log data structure and rewriting the second attribute of ownership on the disk.

By way of background, Delaney describes a system for emulating logging or journaling file systems by means of a snapshot mechanism.

Applicant respectfully urges that Matsunami and Delaney taken alone or in combination do not teach or suggest Applicant's claimed novel *changing a first attribute of ownership from source server ownership to an un-owned state by writing the change to a log data structure and rewriting the first attribute of ownership on the disk, where the first attribute is a predetermined ownership sector on each disk, changing a second attribute of ownership from source ownership to an un-owned state by writing the change to a second log data structure and rewriting the second attribute of ownership on the disk, where the second attribute is small computer systems interface (SCSI) reservation, changing the first attribute of ownership from the un-owned state of ownership to destination server ownership by writing the change to a third log data structure and rewriting the first attribute of ownership on the disk, and changing the second attribute of ownership from the un-owned state to destination server ownership by writing the change to a fourth log data structure and rewriting the second attribute of ownership on the disk*. In further detail, Applicant's invention is changing two ownership attributes relating to the disk from a source server ownership, to an un-owned state, to destination server ownership. Delaney only describes a system for creating a journaling system using snapshots in a system without journaling capabilities. There is no teaching or suggestion in Delaney of changing ownership information of disks. Additionally, Matsunami only describes allocating and resizing storage areas on disks and is silent concerning changing ownership attributes between three ownership states.

Furthermore, neither Matsunami nor Delaney disclose or suggest changing *a SCSI reservation* and *a predetermined ownership sector on each disk*, as claimed by Applicant. Matsunami only discloses “a plurality of IDs can be set to the same port so that the target ID to which each LUN belongs is stored.” (Matsunami, paragraph 0045). However, there is no disclosure in Matsunami of using or changing a *SCSI reservation*. Also, Matsunami does not disclose changing a *predetermined ownership sector on each disk*, as claimed by Applicant. Additionally, Delaney only discloses uses of a SCSI connection, but Delaney is totally silent about *a SCSI reservation* and *a predetermined ownership sector*, as claimed by Applicant.

Applying `vgremove` command and `vgimport` command using LVM on Matsunami (as suggested by the examiner) would not teach changing ownership because `vgremove` only removes the volume/disk from the system. `Vgimport` adds a new volume or disk. Additionally, in Col. 10, lines 11-13, the `vgimport` command assumes that the volume group information has already been created on the physical volume, therefore `vgimport` is not changing ownership attributes when adding a new disk. There is no writing of ownership information between the three states for one disk or one volume.

Accordingly, the Applicant respectfully urges that Matsunami and Delaney, taken either singly or in combination, are legally insufficient to make obvious the present claims under 35 U.S.C §103 because of the absence of the Applicant’s *changing a first attribute of ownership from source server ownership to an un-owned state by writing the change to a log data structure and rewriting the first attribute of ownership on the disk, where the first attribute is a predetermined ownership sector on each disk, changing a second attribute of ownership from source ownership to an un-owned state by writing the change to a second log data structure and rewriting the second attribute of*

ownership on the disk, where the second attribute is small computer systems interface (SCSI) reservation, changing the first attribute of ownership from the un-owned state of ownership to destination server ownership by writing the change to a third log data structure and rewriting the first attribute of ownership on the disk, and changing the second attribute of ownership from the un-owned state to destination server ownership by writing the change to a fourth log data structure and rewriting the second attribute of ownership on the disk.

At paragraph 7 of the Office Action, claim 8 was rejected under 35 U.S.C. §103 as being unpatentable over Matsunami, in view of Gross, and in further view of Delaney.

The present invention, as set forth in representative claim 8, comprises in part:

8. A method of transferring ownership of a volume having a plurality of disks comprising the steps of:
- writing a first destination log;
 - verifying that the plurality of disks can be transferred;
 - writing a first source log;
 - verifying that the volume can be accepted by the destination;
 - writing a second destination log;
 - writing a second source log;
 - performing a first part of a transfer process by changing ownership information on each disk to an un-owned state from a source server owned state;*
 - writing a third source log ;
 - writing a third destination log ;
 - performing a second part of the transfer process by changing the ownership information on each disk from to a destination sever owned state from the un-owned state; and*
 - erasing the previously written logs.

Applicant respectfully urges that Gross, Matsunami, and Delaney, taken alone or in any combination do not teach or suggest Applicant's claimed novel *performing a first*

part of a transfer process by changing ownership information on each disk to an un-owned state from a source server owned state ... performing a second part of the transfer process by changing the ownership information on each disk from to a destination sever owned state from the un-owned state. In further detail, Applicant's claimed invention is transferring ownership of a volume and creating a log of the transaction. Gross only describes removing and adding a new volume. There isn't transferring of ownership by *performing a first part of a transfer process by changing ownership information on each disk to an un-owned state* when removing and adding a new volume because the underlying volume is different. Applicant's invention applies both the *first part of a transfer process* and the *second part of the transfer process* to the same volume or disks. Additionally, Matsunami and Delaney do not teach of transferring ownership of a volume.

Accordingly, the Applicant respectfully urges that Matsunami, Gross, and Delaney, taken either singly or in combination, are legally insufficient to make obvious the present claims under 35 U.S.C §103 because of the absence of the Applicant's *performing a first part of a transfer process by changing ownership information on each disk to an un-owned state from a source server owned state ... performing a second part of the transfer process by changing the ownership information on each disk from to a destination sever owned state from the un-owned state.*

At paragraph 8 of the Office Action, claim 27 was rejected under 35 U.S.C. §103 as being unpatentable over Gross, in view of Black, US Patent No. 6,708,265, hereinafter Black.

Applicant respectfully notes that claim 27 is a dependent claim that depends from an independent claim which is believed to be in condition for allowance. Accordingly, claim 27 is believed to be in condition for allowance.

All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims.

The Applicant respectfully solicits favorable action.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,



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